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LONGITUDINALLY ADJUSTABLE
MOUNT FOR A SNOWBOARD BINDING

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1 This application is a continuation-in-part of the
2 application filed December 2, 1998 under Serial No.
3 09/205,240 which is a continuation-in-part of the
4 application filed July 28, 1997 under Serial No. 08/901,387,
5 now U. S. Patent No. 6,015,161.

6 BACKGROUND OF THE INVENTION

7 The field of the invention is adjustable mounts for
8 snowboard bindings.

9 Snowboarding is a sport wherein a person uses a
10 snowboard for recreational travel down a snow-covered
11 inclined surface. A mount fastens a binding to the
12 snowboard. The popularity of snowboarding is growing all
13 over the world. Snowboarding is beginning to rival skiing
14 as a recreational sport. While snowboarding a person stands
15 on the snowboard with both feet and his body angled to the

1 longitudinal axis of the snowboard.

2 The Revelation snowboard has two sets of two parallel
3 tracks and two sets of four T-nuts. Each set of the four T-
4 nuts float within one of the two sets of the two parallel
5 tracks and mechanically couples one of two bindings to one
6 of the two sets of the two parallel tracks. Revelation has
7 a trademark, FREEDOM GROOVE, and a patent pending for its
8 snowboard.

9 U. S. Patent No. 6,089,581 teaches a system which
10 mounts bindings to a snowboard. The system allows relative
11 distance between the mounted bindings to be much more
12 accurately adjusted by the user, making snowboarding more
13 enjoyable and safer. The system involves a front and a rear
14 set of parallel cavities formed on the top surface of a
15 snowboard. The snowboard accepts nuts. The nuts slide in
16 each cavity. Each nut receives a corresponding bolt from
17 the binding to be mounted. The nuts can be easily replaced
18 if stripped, obviating the need for frequent and expensive

1 repairs to fix stripped nuts, as is common with typical
2 snowboards.

3 U. S. Patent No. 5,261,698 teaches a binding whose
4 rotational position relative to an axis perpendicular to a
5 snowboard can be adjusted. The binding includes a hold-down
6 plate and a binding base plate. The hold-down plate may be
7 secured to the snowboard in several different positions on
8 the board and is fixed to the snowboard by screws extending
9 through a set of holes in the hold-down plate. The binding
10 base plate can be rotated relative to the hold-down plate.
11 The binding base plate and the hold-down plate each have
12 ribs or ridges, respectively, which lock the angular
13 position of the binding base plate relative to the hold-down
14 plate. The rotational position of the binding base plate
15 can only be adjusted by removing the boot from the binding
16 base plate and disengaging the screws from the holes in the
17 hold-down plate. Therefore, angular adjustment of the
18 binding cannot be done "on the fly". Some bindings permit a

1 person using a snowboard to adjust their rotational
 2 orientation on the snowboard. Look makes a binding which
 3 includes a circular plate and a foot-bed. The circular
 4 plate is attached to the snowboard by a set of screws. The
 5 screws engage with the snowboard. The foot-bed has a
 6 central aperture for rotatably receiving the circular plate.
 7 A lock assembly locks the foot-bed in a predetermined
 8 rotational position with respect to the circular plate. A
 9 housing, including one or more fasteners, is attached to the
 10 foot-bed for securing a boot to the foot-bed so that the
 11 boot cannot be pulled free of the foot-bed except when the
 12 fasteners are released. A person adjusts the orientation of
 13 the binding at the beginning of the season and often makes
 14 no further adjustments.

15 U. S. Patent No. 5,577,755 teaches a rotatable binding
 16 for a snowboard which includes a base plate and a binding
 17 plate. The base plate is mounted on the snowboard. The
 18 binding plate is rotatably mounted on the base plate. The

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1 rotatable binding also includes a locking assembly. The
2 locking assembly includes a pin and a foot binding. The
3 locking assembly selectively locks, at a desired angle of
4 rotation, the binding plate to the base plate. The base
5 plate includes an indexing platform and a pedestal. The
6 pedestal is disposed on the bottom of the base plate. The
7 indexing platform has a multiplicity of bores arranged in a
8 circular arc about a central axis. The pedestal has a width
9 about the width of a human foot and traverses the snowboard
10 in order to support the indexing platform above the top
11 surface of the snowboard. The pin does not restrict
12 rotation of the binding base plate relative to the base
13 plate and is selectively moveable from a raised position to
14 a lowered position. The pin engages an indexing bore such
15 that the binding plate may not rotate relative to the base
16 plate.

17 U. S. Patent No. 5,028,068 teaches a device which
18 pivotally mounts a binding on a snowboard on the upper

1 surface thereof. A manually operated handle allows the
2 binding to be changed in any direction desired and
3 thereafter with a flip of the handle locked into the
4 selected position. The binding includes a binding base
5 plate and a swivel plate. The binding base plate is mounted
6 on the swivel plate.

7 U. S. Patent No. 5,354,088 teaches a coupling which
8 releasably mounts a binding to a turntable. The turntable
9 is adjustably secured to a snowboard.

10 U. S. Patent No. 4,871,337 teaches a snowboard in which
11 the rider's feet are positionable within bindings which are
12 formed on first and second riding plates. Each of the first
13 and second riding plates is positionable above a channel
14 section. The channel section is formed within a rider
15 support surface of the riding apparatus. Each riding plate
16 supports fasteners. The fasteners are releasably engageable
17 with retaining elements which are installed within the
18 channel section. After loosening the fasteners from the

1 retaining elements, each of the first and second riding
2 plates may be repositioned angularly or longitudinally with
3 respect to its channel section thereby permitting the
4 snowboard to be used with a variety of stances and leg
5 spacings.

6 U. S. Patent No. 5,021,017 teaches a water sports board
7 which has a base formed with rows of detent teeth for
8 locking engagement with the peripheral teeth of binder
9 plates. The binder plate may be angularly or longitudinally
10 adjusted relative to the base. The board also has a pair of
11 boots that are mounted to the binder plates and mounting
12 assemblies for mounting the binder plates to the base.

13 Today there exists several kinds of water sports boards
14 including surfboards, knee-boards, water skis and boards
15 upon which a rider, towed by a power boat, stands with his
16 feet spread longitudinally apart upon the board. Some of
17 these boards, including the last mentioned type to which
18 this invention particularly pertains, are equipped with foot

1 bindings to stabilize the rider upon the board and to
 2 enhance his foot control of the board. With this latter
 3 type of board, which has only recently obtained popularity,
 4 the rider positions his feet on the board one behind the
 5 other at a skewed angle with respect to the longitudinal
 6 axis of the board. This posture thus is similar to that
 7 used by surfers on surfboards. Initially these types of
 8 boards were merely equipped with strips of course,
 9 frictional material to provide foot traction. Since they
 10 were pulled in tow behind powerful motor boats riders
 11 quickly found that they were not able to maintain their feet
 12 in position well enough when subjected to strong tow rope
 13 pulling forces. These types of water sports boards are
 14 equipped with foot bindings. Water ski foot bindings
 15 include a toe piece and a heel piece mounted to the top
 16 surface of the ski. One of the pieces is usually adjustable
 17 to accommodate different skier foot sizes and to facilitate
 18 foot entry. These are shown in U. S. Patent No. 2,933,741,

1 U. S. Patent No. 3,102,279 and U. S. Patent No. 3,127,623.
2 Water ski bindings have also existed by which the position
3 of the whole binding for one foot may be repositioned upon
4 the ski. Exemplary of this type of binding is that shown in
5 U. S. Patent No. 2,740,972. These water ski bindings
6 however do not provide for angular foot adjustment since
7 water skiing is best done with the skier's feet aligned with
8 the skis. Recently, a board known as a Skurfer has been
9 equipped with bindings that can be adjusted both
10 longitudinally and angularly. Its bindings include oblong
11 plates upon which toe and heel pieces, hereinafter
12 collectively referred to as "boots", are mounted. The
13 plates are held in position by threaded posts that extend
14 through arcuate slots in holding the plates firmly in place
15 at selected positions upon the board. Though these types of
16 bindings have permitted both longitudinal and angular
17 positioning, they have tended to loosen and skew in
18 operation. Also, their degree of angular adjustment has

1 been limited. It thus is seen that a water sports board of
2 the type having foot bindings which can be more fully
3 adjusted rotationally, as well as longitudinally adjusted,
4 and which may be easily yet securely repositioned, has
5 remained an elusive goal.

6 U. S. Patent No. 5,433,636 teaches a snowboard having a
7 channel extending along a portion of the length thereof.

8 Two bindings are secured to the snowboard through the
9 channel. Each binding may be rotated between a locked
10 starting position in which the long axis of the binding
11 extends parallel to the long axis of the snowboard and a
12 locked skiing position in which the long axis of the binding
13 extends transversely to the long axis of the snowboard.
14 After the binding has been rotated to a selected position,
15 the binding is secured in place by a locking mechanism.
16 Each binding includes a resilient front strap assembly and a
17 resilient heel support which secures one of the user's feet
18 to the binding and permits a user to quickly and easily

1 circumferential teeth and the sliding segment teeth. The
2 user performs this adjustment operation without removing the
3 boot from the mounting platform and without loosening
4 screws.

5 U. S. Patent No. 5,586,779 teaches a binding which
6 includes a mount-plate. The mount plate is fixedly mounted
7 to a snowboard. The mount plate has a cavity centrally
8 defined therein. A ring is fixedly attached to the mount
9 plate. The mount plate has a bore centrally defined
10 therethrough. A hub mounts the binding to the snowboard.
11 The hub is centrally disposed in the cavity and extends
12 through the bore. The mount plate is free to rotate about
13 the hub thereby allowing for adjustment of an angular
14 position of the mount plate. A locking mechanism arrests
15 and releases rotation of the mount plate thereby allowing
16 the angular position of the mount plate to be adjusted. A
17 user may quickly and easily adjust the angular position of
18 binding relative to the snowboard without removing his boot

1 from the binding.

2 U. S. Patent No. 5,826,910 teaches a swivelable
3 bindings assembly for use with a snowboard which makes a
4 selective rotational adjustment of the bindings about an
5 axis normal to the upper surface of the snowboard and which
6 includes a rotatably adjustable bindings plate having a
7 bottom surface, an upper portion adapted for releasably
8 supporting a user's boot, and a relatively large diameter
9 circular opening in the central portion of the plate. The
10 assembly includes a holds-down disk that is received in the
11 plate opening and is adapted to slidably engage edge
12 portions of the plate opening to restrain the plate against
13 upward separation from the disk and to hold the plate with
14 its bottom surface slidably engaged with, and vertically
15 supported by, the low-friction planar surface of a sheet of
16 material secured to the top of the snowboard, the disk also
17 serving to mount the plate for rotation about an axis
18 through the center of the disk. Mechanism for releasably

1 locking the plate at selected rotational positions includes
2 a locking pin with an elongate shaft that engages a
3 horizontal bore extending from an edge of the base plate to
4 the base plate opening, the plate being rotatable to bring
5 the bore in alignment with at least one recess in the outer
6 edge of the disk whereby the pin shaft can be engaged in a
7 selected recess to secure the plate against rotation. These
8 bindings for snowboards can be adjusted with respect to its
9 angular orientation to the longitudinal centerline of the
10 snowboard. The recent surge in popularity of the sport of
11 snowboarding has brought renewed interest in addressing
12 certain problems that are unique to the sport, as opposed to
13 other skiing endeavors such as alpine skiing and water
14 skiing. First, it is noted that according to the
15 conventional arrangement of bindings on a snowboard, fore
16 and aft binding assemblies are secured to the board in a
17 manner to support both feet at a substantial angle with
18 respect to the longitudinal centerline of the board. This

1 cross orientation of the bindings allows the user to assume
2 a side-forward position necessary for optimum control of the
3 board during active snowboarding. It is also noted that
4 snowboarders often desire to modify the angle of the feet
5 relative to the centerline of the board to achieve maximum
6 performance during their run. Such changes in the angle of
7 the feet can be necessitated by the degree of incline of the
8 slope, the amount and quality of the snow encountered, or
9 the amount of `jumping` desired during descent. When a
10 down-hill run is completed it is necessary for the user to
11 use self- propulsion methods to maneuver over flat terrain
12 and to negotiate the life line and to get in position for
13 pick up by a lift chair. In order to do this the
14 snowboarder will commonly release the aft foot from its
15 bindings so that he or she can use a "skateboarding"
16 technique in which the free foot is used for propulsion.
17 Unfortunately, because of the transverse orientation of the
18 secured foot and the face- forward position that the

1 maneuvering snowboarder tries to assume, the leg is forced
2 towards an unnatural position causing stress and strain on
3 the entire leg, including the vulnerable ankle and knee
4 joints. Of course the snowboarder has the option of
5 detaching both feet from the board and hand carrying the
6 board in such circumstances, but such procedure is
7 inconvenient and time consuming. Furthermore, the cross-
8 orientation of the bindings can lead to difficulties when
9 riding the lift chair, requiring the board to be held in an
10 unwieldy manner that can interfere with a companion lift
11 chair rider, and also causing stress and strain in the
12 secured leg of the user. It has become evident that one way
13 to address these problems would be in providing bindings
14 that are adjustable with respect to their angular
15 orientations to the board centerline.

16 World Patent No. 97/03733 teaches a device for
17 positioning longitudinally a snowboard binding on a
18 snowboard. The snowboard binding includes a binding plate.

1 A rail is attached to the snowboard. The device includes a
2 sliding member and a central stud. The central stud couples
3 the sliding member to the rail section.

4 French Patent No. 2,715,861 teaches a single central
5 bolt which anchors a base plate of a snowboard. A C-shaped
6 piece is anchored in the snowboard.

7 European Patent No. 351,298 teaches a device for
8 positioning longitudinally a snowboard binding on a
9 snowboard. U. S. Patent No. 5,660,410 teaches a snowboard
10 binding system. U. S. Patent No. 5,261,689 and U. S. Patent
11 No. 5,356,170 also teach other snowboard binding systems of
12 a popular type that which employ a hold-down disk that
13 engages a circular opening in a boot mounting plate whose
14 bottom is supported on a snowboard. Vertical bores through
15 the hold-down disk allow it to be secured to threaded bores
16 in the board using threaded bolts or screws, and ordinarily
17 there are extra pairs of threaded bores in the board to
18 allow adjustment between the fore and aft bindings in

1 several different longitudinal positions, to accommodate the
2 desired feet-apart stance of the rider. There are ridges or
3 splines on the hold-down disk that engage complementary
4 ridges or splines on the binding plate, to secure the plate
5 at a given angular orientation. This will allow angular
6 adjustment of the bindings, but unfortunately, to accomplish
7 this, several bolts per hold-down disk, usually four, must
8 be loosened using a suitable tool in order to loosen the
9 disk sufficiently from the plate to allow rotation of the
10 plate to a new orientation. The fasteners must then be
11 retightened. The bindings system of U. S. Patent No.
12 5,004,654 requires tightening and loosening only a single
13 bolt. Unfortunately, while the systems shown in above-
14 mentioned patents allow angular adjustment, they share the
15 major drawback in not allowing such adjustment to be made
16 quickly, easily and conveniently, because they require
17 removal of the boot from the bindings in each case, and the
18 use of tools to loosen and tighten the fasteners.

1 U. S. Patent No. 5,354,088 teaches a snowboard binding
2 which can be rapidly and easily removed from the board,
3 should this be a solution to the above-discussed problems,
4 but this disclosure does not show a means for rapidly
5 adjusting the angle of the bindings. Relatively recent
6 approaches to the need for rotatably adjustable bindings are
7 revealed in U. S. Patent No. 5,277,635 which teaches a
8 system which is suited for use on water ski boards, however
9 it appears that the locking mechanism would not be adequate
10 for use in a snowboard environment. U. S. Patent No.
11 5,499,837 teaches a locking mechanism which depends on
12 specially formed vertically opposed undulating surfaces that
13 can be brought in and out of engagement and which appears
14 complex and expensive.

15 SUMMARY OF INVENTION

16 The present invention is generally directed to an
17 adjustable mount for a snowboard binding. A snowboard is of
18 a sandwich construction and includes a polyethylene base, a

1 first fiberglass layer, a wood core, a second fiberglass
2 layer and a plastic top sheet. The snowboard has a center-
3 line. The snowboard binding includes a binding base plate
4 and a disc. The binding base plate is disposed on the
5 snowboard. The disc has a center-line and a bottom surface.

6 The disc is rotatably coupled to the binding base plate.

7 In a first separate aspect of the present invention,
8 the snowboard has a channel which longitudinally extends
9 along the center-line in the wood core, the second
10 fiberglass layer and the plastic top sheet thereof. The
11 mount includes a rail. The rail is disposed in the channel
12 and is fixedly coupled thereto. The rail has two parallel
13 series of notches. The locking mechanism securely couples
14 the rail to the disc.

15 Other aspects and many of the attendant advantages will
16 be more readily appreciated as the same becomes better
17 understood by reference to the following detailed
18 description and considered in connection with the

1 accompanying drawing in which like reference symbols
2 designate like parts throughout the figures.

3 The features of the present invention which are
4 believed to be novel are set forth with particularity in the
5 appended claims.

6 BRIEF DESCRIPTION OF THE DRAWING

7 Fig. 1 is an exploded perspective drawing of a
8 snowboard, a snowboard binding including a binding base
9 plate and a disc and an adjustable mount including a rail
10 and a locking mechanism including a lock plate and two
11 handles each of which has a safety tab.

12 Fig. 2 is a perspective drawing of the disc of Fig. 1.

13 Fig. 3 is a perspective drawing of the disc of Fig. 1
14 after the disc has been turned over.

15 Fig. 4 is a perspective drawing of the rail of Fig. 1.

16 Fig. 5 is a perspective drawing of the lock plate of
17 Fig. 1.

18 Fig. 6 is a schematic drawing of the locking mechanism

1 of Fig. 1 when locked with the safety tabs engaged.

2 Fig. 7 is a schematic drawing of the locking mechanism
3 of Fig. 1 when locked with the safety tabs disengaged.

4 Fig. 8 is a schematic drawing of the locking mechanism
5 of Fig. 1 when unlocked.

6 Fig. 9 is a schematic drawing of the locking mechanism
7 of Fig. 1 when unlocked and released.

8 Fig. 10 is an exploded perspective drawing of a disc of
9 a snowboard binding and two locking levers of a locking
10 mechanism.

11 Fig. 11 is a schematic drawing of the locking mechanism
12 of Fig. 10 when locked.

13 Fig. 12 is a schematic drawing of the locking mechanism
14 of Fig. 10 when unlocked and released.

15 Fig. 13 is a partial, exploded perspective drawing of a
16 snowboard, a snowboard binding including a binding base
17 plate and a disc and an adjustable mount including a rail.

18 Fig. 14 is a perspective drawing of the disc of Fig. 13

1 after the disc has been turned over.

2 Fig. 15 is an exploded perspective drawing of a
3 snowboard, a snowboard binding including a binding base
4 plate, a disc and a lock plate.

5 Fig. 16 is an exploded perspective drawing of a
6 snowboard binding including a binding base plate and a disc
7 and an adjustable mount including a rail and a locking
8 mechanism including a lock plate and slider-bolts according
9 to the fifth embodiment.

10 Fig. 17 is a perspective drawing of the rail of Fig.
11 16.

12 Fig. 18 is a side elevation view of the rail of Fig.
13 16.

14 Fig. 19 is a side elevation view of one of the slider-
15 bolts of Fig. 16.

16 Fig. 20 is a front elevation view of one of the slider-
17 bolts of Fig. 16.

18 Fig. 21 is a side elevation view of the lock plate of

1 Fig. 16.

2 Fig. 22 is a side elevation view of the lock plate of
3 Fig. 16 after the lock plate has been turned over.

4 Fig. 23 is an exploded perspective drawing of a
5 snowboard binding including a binding base plate and a disc
6 and an adjustable mount including a rail and a locking
7 mechanism including a lock plate and slider-bolts according
8 to the first embodiment.

9 DESCRIPTION OF THE PREFERRED EMBODIMENT

10 Referring to Fig. 1 a snowboard 10 is of a sandwich
11 construction and includes a polyethylene base 11, a first
12 fiberglass layer 12, a wood core 13, a second fiberglass
13 layer 14 and a plastic top sheet 15. The snowboard 10 has a
14 center-line. A channel 16 longitudinally extends along the
15 center-line in the wood core 13, the second fiberglass layer
16 14 and the plastic top sheet. A snowboard binding 20
17 includes a binding base plate 21 and a disc 22. The binding
18 base plate 21 has a bore 23 with a plurality of inwardly

1 directed, radially disposed teeth 24. The disc 22 has a
2 circular peripheral side edge 25 with a plurality of
3 outwardly directed, radially disposed teeth 26. The disc 22
4 is lifted away from the binding base plate 21 so that the
5 binding base plate 21 can be rotatably adjusted. Once the
6 binding base plate 21 has been rotatably adjusted the disc
7 22 is placed on the binding base plate 21 so that each of
8 the outwardly directed, radially disposed teeth 26 of the
9 disc 22 engages one of the inwardly directed, radially
10 disposed teeth 24 of the binding base plate 21 in order to
11 rotatably lock the binding base plate 21 in place relative
12 to the disc 22. A mount 27 includes a rail 28 and two
13 mounting pins 29.

14 Referring to Fig. 1 in conjunction with Fig. 2 and Fig.
15 3 the disc 22 has a center-line and a bottom surface. A bar
16 30 is disposed on the bottom surface of the disc 22 about
17 the center-line thereof and is fixedly coupled thereto. The
18 bar 30 has two peripheral edges each of which has two

1 opposing and parallel series of notches 31.

2 Referring to Fig. 1 in conjunction with Fig. 4 the rail
3 28 is a flexible member and has two sets of pluralities of
4 slots 32 each of which extends along its side edges, a key
5 slot 33 of a rectangular dimension and two opposing and
6 parallel series of notches 34. The rail 28 is disposed in
7 the channel 16 and is fixedly coupled thereto. Each
8 mounting pin 29 includes a cylindrical shaft 35, a flat,
9 disc-shaped cap 36 and a rectangular base 37. The flat,
10 rectangular base 37 is of a rectangular dimension slightly
11 smaller than the rectangular dimension of the key slot 33.
12 The disc 22 has two bores 38 which are disposed on the
13 center-line thereof. The bar 30 has two bores 39 each of
14 which is aligned with one of the bores 38 of the disc 22 to
15 form two sets of bores 40. The flat, disc-shaped cap 36 is
16 fixedly coupled to the cylindrical shaft 35 at one end
17 thereof. When the cylindrical shaft 35 of each mounting pin
18 29 has been inserted into one of the two sets of bores 40,

1 the flat, rectangular base 37 is fixedly coupled to the
 2 cylindrical shaft 35 at the other end thereof in order to
 3 loosely secure the cylindrical shaft 35 of each mounting pin
 4 29 within one of the two sets of bores 40. Each mounting
 5 pin 29 is slidably coupled to the rail 28 when its flat,
 6 rectangular base 37 is inserted into the key slot 33.

7 Referring to Fig. 1 in conjunction with Fig. 5 a
 8 locking mechanism 50 includes a lock plate 51, a screw 52 of
 9 a diameter, two handles 53, two pins 54. Each handle 53 has
 10 a safety tab 55. The disc 22 has two safety slots 56. Each
 11 pin 54 rotatably couples the one of the handles 53 to the
 12 lock plate 51. Each safety tab 55 is disengageably coupled
 13 to one of the safety slots 56. The disc 22 has a threaded
 14 bore 57 which is axially disposed. The lock plate 51 has a
 15 bore 58 which is axially disposed and which is of a diameter
 16 slightly larger than the diameter of the screw 52. The
 17 screw 52 is inserted into the bore 58 of the lock plate 51
 18 and is then threaded into the threaded bore 57 of the disc

1 22 thereby rotatably coupling the lock plate 51 to the disc
2 22. The lock plate 51 has two curved ramps 59 which are
3 oppositely disposed. The cylindrical shaft 35 of each
4 mounting pin 29 is slidably coupled to one of the curved
5 ramps 59. The flat, disc-shaped cap 36 of each mounting pin
6 29 secures it therein.

7 Referring to Fig. 1 in conjunction with Fig. 6 when the
8 locking mechanism 50 is locked and each safety tab 55
9 engages one of the safety slots 56. Each series of notches
10 34 of the rail 28 engages one of the series of notches 31 of
11 the bar 30 so that the snowboard binding 20 can not be
12 adjusted longitudinally relative to the snowboard 10.

13 Referring to Fig. 1 in conjunction with Fig. 7 and Fig.
14 8 when the locking mechanism 50 is locked and each safety
15 tab 55 has disengaged itself from one of the safety slots
16 56. A snowboarder may use the handles 53 to rotate the lock
17 plate 51 in order to unlock it and release the disc 22 from
18 the binding base plate 21 and the rail 28.

1 Referring to Fig. 1 in conjunction with Fig. 9 and Fig.
 2 8 when the locking mechanism 50 is unlocked and released.
 3 By lifting the disc 22 from the rail each series of notches
 4 34 of the rail 28 is disengaged from one of the series of
 5 notches 31 of the bar 30 so that the snowboard binding 20
 6 can be adjusted longitudinally relative to the snowboard 10.

7 Referring to Fig. 10 in conjunction with Fig. 11 and
 8 Fig. 12 a snowboard binding includes a binding base plate
 9 and a disc 122. The disc 122 has a circular peripheral side
 10 edge 123 with a plurality of outwardly directed, radially
 11 disposed teeth. The disc 122 is lifted away from the
 12 binding base plate so that the binding base plate can be
 13 rotatably adjusted. Once the binding base plate has been
 14 rotatably adjusted the disc is placed on the binding base
 15 plate so that all of the outwardly directed, radially
 16 disposed teeth of the disc 122 engage all of the inwardly
 17 directed, radially disposed teeth of the binding base plate
 18 in order to rotatably lock the binding base plate in place

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1 longitudinally relative to the snowboard.

2 Referring to Fig. 13 in conjunction with Fig. 14 a
3 snowboard 210 has a channel 216. A snowboard binding 220
4 includes a binding base plate 221 and a disc 222. The
5 binding base plate 221 has a bore 223 with a plurality of
6 upwardly directed, radially disposed teeth 224. The disc
7 222 has a circular peripheral side edge 225 with a plurality
8 of downwardly directed, radially disposed teeth 226. The
9 disc 222 is lifted away from the binding base plate 221 so
10 that the binding base plate 221 can be rotatably adjusted.
11 Once the binding base plate 221 has been rotatably adjusted
12 the disc 222 is placed on the binding base plate 221 so that
13 all of the downwardly directed, radially disposed teeth 226
14 of the disc 222 engage all of the upwardly directed,
15 radially disposed teeth 224 of the binding base plate 221 in
16 order to rotatably lock the binding base plate 221 in place
17 relative to the disc 222. A mount 227 includes two rails
18 228 and two mounting pins.

1 Still referring to Fig. 13 in conjunction with Fig. 14
 2 the disc 222 has a center-line and a bottom surface. Two
 3 bars 230 are oppositely and parallelly disposed on the
 4 bottom surface of the disc 222 about the center-line thereof
 5 and are fixedly coupled thereto. Each bar 230 has a series
 6 of downwardly directed notches 231. The rails 228 are
 7 disposed in the channel 216 and is fixedly coupled thereto.
 8 Each rail 228 has a series of upwardly directed notches 242.

9 Referring to Fig. 15 a snowboard 310 is of a sandwich
 10 construction and includes a polyethylene base, a first
 11 fiberglass layer, a wood core, a second fiberglass layer and
 12 a plastic top sheet 315. The snowboard 310 has a center-
 13 line. Two parallel and opposing series of threaded bores
 14 316 longitudinally extend about the center-line in the
 15 snowboard 310. A snowboard binding 320 includes a binding
 16 base plate 321 and a disc 322. The binding base plate 321
 17 has a bore 323 with a plurality of inwardly directed,
 18 radially disposed teeth 324. The disc 322 has a circular

1 peripheral side edge 325 with a plurality of outwardly
2 directed, radially disposed teeth 326. The disc 322 is
3 lifted away from the binding base plate 321 so that the
4 binding base plate 321 can be rotatably adjusted. Once the
5 binding base plate 321 has been rotatably adjusted the disc
6 322 is placed on the binding base plate 321 so that each of
7 the outwardly directed, radially disposed teeth 326 of the
8 disc 322 engages one of the inwardly directed, radially
9 disposed teeth 324 of the binding base plate 321 in order to
10 rotatably lock the binding base plate 321 in place relative
11 to the disc 322.

12 Still referring to Fig. 15 a locking mechanism 350
13 includes a lock plate 351, four screws 352. The disc 322
14 has a center axis and four threaded bores 357 each of which
15 is disposed about the center axis thereof. The lock plate
16 351 has a center axis and four bores 358 each of which is
17 disposed about the center axis thereof. Each bore 358 of
18 the lock plate 351 is of a diameter slightly larger than the

1 relative to the disc 122. A mount includes two mounting
 2 pins 129. The disc 122 has a center-line and a bottom
 3 surface. The disc 122 has two bores 138 which are disposed
 4 on the center-line thereof. A locking mechanism 150
 5 includes two locking levers 151 and two screws 152 of a
 6 diameter. The disc 122 has two threaded bores 157 each of
 7 which is disposed adjacent to one of the two bores thereof.
 8 Each locking lever 151 has a bore 158 which is of a diameter
 9 slightly larger than the diameter of each screw 152. Each
 10 screw 152 is inserted into the bore 158 of one of the
 11 locking levers 151 and is then threaded into the threaded
 12 bore 157 of the disc 122 thereby rotatably coupling each of
 13 the locking levers 151 to the disc 122. Each locking lever
 14 151 engages the cylindrical shaft of one of mounting pins
 15 129 in order to lock the disc 122 in place. Each locking
 16 lever 151 disengages itself from the cylindrical shaft of
 17 one of mounting pins 129 in order to unlock the disc 122 in
 18 place so that the snowboard binding can be adjusted

1 diameter of one of the screws 352. Each screw 352 is
2 inserted into one of the four bores 358 of the lock plate
3 351 and is then threaded into one of the four threaded bores
4 357 of the disc 322 thereby coupling the lock plate 351 to
5 the disc 322. The lock plate 351 has four curved slots 359
6 which are disposed about the center axis thereof. Each
7 curved slot 359 has within it a curved ramp 360. Each
8 curved slot 359 is disposed adjacent and contiguous to one
9 of the four bores 358 of the lock plate 351. The lock plate
10 351 has a handle 361. A snowboarder may use the handle 361
11 to rotate the lock plate 351 in order to unlock it and
12 release the disc 322 from the binding base plate 320. The
13 snowboard binding of U. S. Patent No. 5,261,698 includes a
14 hold-down plate and a binding base plate. The hold-down
15 plate is fixed to the snowboard by four screws extending
16 through a set of four holes in the hold-down plate. The
17 binding base plate can be rotated relative to the hold-down
18 plate. The binding base plate and the hold-down plate each

1 have ribs or ridges, respectively, which lock the angular
 2 position of the binding base plate relative to the hold-down
 3 plate. The rotational position of the binding base plate
 4 can only be adjusted by removing the boot from the binding
 5 base plate and disengaging the screws from the holes in the
 6 hold-down plate. The disc 322 and the lock plate 351 may
 7 replace the hold-down plate. Similarly two snowboard
 8 bindings 320 each of which includes the binding base plate
 9 321, the disc 322 and the lock plate 351 may be used with
 10 the snowboard which Revelation Snowboard makes. The
 11 snowboard has two sets of two parallel tracks and two sets
 12 of four T-nuts. Each set of the four T-nuts float within
 13 one of the two sets of the two parallel tracks and
 14 mechanically couples one of two snowboard bindings 320 to
 15 one of the two sets of the two parallel tracks. Revelation
 16 Snowboard has a trademark, FREEDOM GROOVE, and a patent
 17 pending for its snowboard.

18 Referring to Fig. 16 in conjunction with Fig. 17 and

1 Fig. 18 an adjustable mount 410 includes a rail 411 and a
 2 locking mechanism 412. The rail 411 has a key-slot 413 and
 3 a plurality of teeth 414. The rail is coupled to a
 4 snowboard. The locking mechanism 412 includes a lock plate
 5 415 and a disc 416, two slider-bolts 417 and two t-nuts 418.
 6 The lock plate 415 has a post 419 and protrusions 420. The
 7 post 419 and protrusions 420 are disposed on the underside
 8 of the lock plate 415. A snowboard binding includes a
 9 binding base plate 421. The adjustable mount 410 couples
 10 the binding base plate 421 of the snowboard binding to the
 11 rail 411 on the snowboard.

12 Referring to Fig. 16 in conjunction with Fig. 19 and
 13 Fig. 20 the adjustable mount 410 is secured by using the
 14 slider-bolts 417 which are inserted into the key-slot 413
 15 and engage the rail 411 by means of the teeth 414 of the
 16 rail 411. Once the slider-bolts 417 are engaged within the
 17 teeth 414 of the rail 411 the binding base plate 421 is
 18 attached by means of holes located in a central bore of the

1 binding base plate 421. The disc 416 is used to help secure
2 the binding base plate 421 to the rail 411 by means of t-
3 nuts 418 which are attached to the slider-bolts 417 at their
4 threaded protrusions. A raised central bar of each slider-
5 bolt 417 allows enough space between the binding base plate
6 421 and the rail 411 so that the binding base plate 421 can
7 freely move the length of the rail 411. The locking
8 mechanism 412 also includes a spring 422 and a ring 423.

9 Referring to Fig. 16 in conjunction with Fig. 21 and
10 Fig. 22 movement of the binding base plate 421 along the
11 rail 411 is controlled incrementally by the protrusions 420
12 of the lock plate 415 which is housed in the central bore of
13 the binding base plate 421. The protrusions 421 extend
14 through the holes and interlock with the teeth 414 of the
15 rail 411. The protrusions 420 are held secure by the spring
16 422. The spring 422 applies downward pressure to the lock
17 plate 415. The protrusions 420 must be disengaged from the
18 teeth 414 in order to move the binding base plate 421 along

1 the rail 411. Disengagement is accomplished by the lifting
2 the ring 423. The ring 423 is attached to the lock plate
3 415 by means of the post 419. Once disengaged the binding
4 base plate 421 is free to move along rail 411. When the
5 ring 423 is released the spring 422 forces the protrusions
6 420 to secure themselves in the teeth 414 of the rail 411
7 disallowing any further movement of the binding base plate
8 421 along the rail 411.

9 Referring to Fig. 23 an adjustable mount 510 includes a
10 rail 511 and a locking mechanism 512. The rail 511 has a
11 key-slot 513 and a plurality of teeth 514. The rail is
12 coupled to a snowboard. The locking mechanism 512 includes
13 a lock plate 515 and a disc 516, two slider-bolts 517, two
14 gear-nuts 518 and a main gear 519. The main gear 519
15 engages both of the two gear-nuts 518. A snowboard binding
16 520 includes a binding base plate 521. The adjustable mount
17 510 couples the binding base plate 521 of the snowboard
18 binding 520 to the rail 511 on the snowboard.

1 Still referring to Fig. 23 the adjustable mount 510 is
2 secured by using the slider-bolts 517 which are inserted
3 into the key-slot 513 and engage the rail 511 by means of
4 the teeth 514 of the rail 511. Once the slider-bolts 517
5 are engaged within the teeth 514 of the rail 511 the binding
6 base plate 521 is attached by means of holes located in a
7 central bore of the binding base plate 521. The disc 516 is
8 used to help secure the binding base plate 521 to the rail
9 511 by means of gear/nuts 518 which are threadedly coupled
10 to the slider-bolts 517 at their threaded protrusions. A
11 raised central bar of each slider-bolt 517 allows enough
12 space between the bindings base plate 521 and the rail 511
13 so that the binding base plate 521 can freely move the
14 length of the rail 511. The main gear 519 has a slot 551.
15 The locking mechanism 512 also includes handles 553 which
16 engage the slot in the main gear 519. When the locking
17 mechanism 512 is locked a snowboarder may use the handles
18 553 to rotate the lock plate 51 in order to unlock the

1 locking mechanism 512 and release the disc 522 from the
2 binding base plate 521 and the rail 28.

3 Referring again to Fig. 1, Fig. 16 and Fig. 23 the
4 rails 28, 411 and 511 both flexible members. This is an
5 essential feature of the adjustable mounts 10, 410 and 510
6 when they are used to couple binding base plate 21, 421 and
7 521, respectively, to a snowboard 11.

8 From the foregoing it can be seen that a longitudinally
9 adjustable mount for a snowboard binding has been described.
10 It should be noted that the sketches are not drawn to scale
11 and that distances of and between the figures are not to be
12 considered significant.

13 Accordingly it is intended that the foregoing
14 disclosure and showing made in the drawing shall be
15 considered only as an illustration of the principle of the
16 present invention.